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### Organizing for innovation

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## Organizing for Innovation

### *Abstract*

Knowledge diffusion and knowledge externalities are important sources of economic growth. It is becoming increasingly difficult to maintain competitive advantage through the pursuit of internal R&D alone, due to changing business environments and the acceleration of technology development, as well as the increasing costs associated with R&D activities. Consequently, firms purposefully search for novel knowledge outside their boundaries, adopting an “open innovation” approach. In this paper, we focus on external knowledge sourcing strategies and discuss the challenges that firms encounter in managing inter-organizational collaborations that such external sourcing implies. In particular, we focus on two ways to organize external knowledge sourcing: learning from foreign environments and the use of corporate incubators as a part of corporate venturing strategy. We conclude by highlighting possible topics for review articles including knowledge exchange and external knowledge sourcing strategies; performance effects of different knowledge sourcing strategies; new organizational forms for managing innovation processes within and between firms.

**Keywords:** Open Innovation; External Knowledge Sourcing; Learning From Foreign Environments; Corporate Incubators.

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## Opening for Innovation

Knowledge is central to organizational growth. Penrose's seminal work on the growth of organizations (1959) asserts that new knowledge forms the basis of organizational growth through the recombination of existing knowledge resources. The resource combination mechanism is essential to the concept of Schumpeterian innovation, which is considered an endogenous phenomenon (see Romer 1986; Lucas 1988; Aghion and Howitt 1990). This implies the role of agentic action by top management teams within organizations. In the Schumpeterian tradition, technological advances that flow from private investment in research and development (R&D) catalyze economic growth. The underlying rationale is that as R&D investment activities create new knowledge, the externalities associated with innovation lead to increasing returns to scale due to knowledge spillovers. There is consensus among scholars that the pursuit of innovative activities is a decisive factor in firm growth (see Chandler 1962; Ansoff 1965).

As discussed, purposeful investment in R&D makes a vital contribution to firms' sales performance, productivity, and profit (see Griliches 1998; Romer 1990; Geroski 1993; van Reenen 1997). The view that knowledge stimulates internal R&D is reinforced in recent knowledge-based views of organizations, which emphasize knowledge as a key competitive asset (Grant and Baden-Fuller, 1995; Conner and Prahalad 1996; Alcacer and Chung 2007). Knowledge-based perspectives extend the resource-based view (RBV) as to the importance of the internal asset base of an organization, by emphasizing knowledge as a primary resource, as well as knowledge as a source of competitive advantage. Despite the importance of knowledge as an input to organizational R&D activities, knowledge has largely been sourced exclusively from within a focal organization. For instance, organizations have historically

developed new products, processes, and services principally by depending on resources within a focal organization's boundaries, rather than on externally sourcing innovation inputs. However, it is becoming increasingly more difficult to maintain competitive advantage through the pursuit of internal R&D alone, because of the acceleration in the increase of knowledge, the development of technology and change of business environments, as well as the increasing costs associated with R&D activities in the last decades.

Teece (1986) keenly observed the breadth of “*know-how*” required for even modestly complex technologies, and claimed that individual organizations are often unable to keep pace in these multiple technologies themselves. Consequently, under conditions of technological uncertainty, organizations are more likely to seek external knowledge rather than to merely pursue internal R&D (see Walker and Weber 1984; Balakrishnan and Wernerfelt 1986; Harrigan 1986). Fritsch and Lucas’s (2001) empirical study, for example, provides evidence for this view, finding that firms that engage in R&D and that are attempting to introduce higher-level innovations (i.e., new to the market rather than new to the firm), are much more likely to engage in cooperative arrangements to access external knowledge. Similarly, Arora and Gambardella (2010) pointed out that organizations’ innovation processes are increasingly relying on externally sourced information. The management literature has investigated the positive link between external knowledge sourcing and accelerated organizational growth through the updating of innovation processes and capabilities (e.g., Levinthal and March 1993; Katila and Ahuja 2002; Chesbrough 2006; Cassiman and Veugelers 2006; Laursen and Salter 2006, 2007). Therefore, organizations pursue external knowledge sourcing when, among other factors, they encounter uncertainty that cannot be attended to by internal R&D alone. Additionally, the literature generally characterizes the dual role of internal and external

R&D activities, as complementary, rather than as substitute capabilities. Chesbrough (2003), for instance, addresses the purposeful acquisition of knowledge outside of a focal organization's boundaries by introducing the concept of open innovation, defined as a *“paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as firms look to advance their technology”*.

### **External Knowledge Sourcing**

External knowledge may be acquired, formally or informally, from numerous sources, such as formal technological agreements, licensing, consulting services, and R&D outsourcing activities. Knowledge may also spread through informal channels such as conferences or trade fairs, research collaborations, purchasing equipment, or informal contacts (Veugelers and Cassiman 2004). Moreover, organizations can learn by hiring employees locally, by using local suppliers (Almeida 1996; Anand and Kogut 1997), or by making contacts with customers, competitors or universities. In addition, recent technological and socio-technical developments, such as the Internet and the ubiquity of web-based platforms, have opened new channels for organizations to access external knowledge by reaching out to potential contributors outside of a focal organization's boundaries. Organizations, for instance, may gain access to new product ideas and potential innovations by soliciting suggestions (Dahlander and Piezunka 2014) from specialist *"crowds"* that are likely employed by other organizations. The crowdsourcing of novel ideas, using expert online digital platforms, has emerged as one of many instruments that large established organizations deploy to obtain external services, ideas, and/or resources that may be used as inputs into organizational innovation processes.

In our discussion, we focus on two specific strategies as examples of knowledge sourcing activities that deserve further investigation: foreign markets as a potential source of knowledge spillovers and corporate venturing activities, more specifically corporate incubators.

### **Learning from Foreign Environments**

Among numerous potential sources of external information, research highlights foreign environments as a source of novel technological knowledge not available in the home market. Firms may also use foreign direct investment (FDI) in search of capabilities that cannot be accessed in the home countries (Chung and Alcacer 2002). International business literature emphasizes that firms may start operations abroad not only to exploit their existing ownership advantages, but also to tap into areas with high technological strength to access new technological knowledge not available in their home countries (Ghoshal and Bartlett 1990; Cantwell 1989). Knowledge spillovers tend to be highly localized (Jaffe et al. 1993). Hence, multinational firms may locate R&D overseas to get into the local knowledge networks and to benefit from locally concentrated technological knowledge. Analogously, exporting markets may constitute an advantageous terrain for such knowledge inflows, as they bring firms into contact with a diverse portfolio of knowledge, not available in the home-market, a phenomenon labeled by recent research as "*learning by exporting*".

An exporting firm with no FDI abroad differs from an asset-seeking multinational company in at least two respects. First, it lacks the degree of foreign market involvement available through FDI, which in turn might imply a lower information exchange between the exporting firm and the host market (Salomon and Shaver 2005). Second, the decision to export and the choice of export destination markets are more likely to be led by other considerations than

explicit technology-seeking objectives. As a consequence, the host markets for exporters are not necessarily the regions that are rich in new technological knowledge. Nonetheless, exporting firms can still get access to new technological information, utilizing some of the mechanisms of technology acquisitions available in the case of foreign direct investment. Evenson and Westphal (1995) suggest that “... *a good deal of the information needed to augment basic capabilities come from the buyers of exports who freely provided product designs and offered technical assistance to improve process technology in the context of their sourcing activities. Some part of the efficiency of export-led development must therefore be attributed to externalities derived from exporting*”.

If anecdotal evidence, mostly derived from case studies, appear to highlight the learning opportunities that export can potentially offer, the econometric evidence on the learning effects provided by exports is still inconclusive. This suggests that research should look for the boundary conditions that might help explain inconsistencies in findings. Such moderating factors can shape the ability of firms to tap into foreign markets knowledge and the way this knowledge is profitably exploited. These factors can be at the geographic, industry, or firm level. Opportunities, therefore, exist to systematize what we know and delineate the most promising paths for research ahead.

### **Corporate Incubators**

Large established corporations are increasingly pursuing external corporate venturing as a strategic tool for enhancing innovation processes (Gompers 2002; Birkinshaw and Hill 2005; Dushnitsky and Lenox 2005, 2006; McGrath et al. 2012). Corporate venture capital (CVC) activity, which is one type of external corporate venturing, can be defined as minority equity investments by a large established corporation in a portfolio of entrepreneurial ventures that



originate outside the focal organization. CVCs can be distinguished from the activities of traditional venture capitalists insofar as CVC investments are made by focal corporations for whom finance is not a core business (Maula 2001; Rauser 2002), and insofar as a relatively large share of the return on investment be strategic in nature (van de Vrande et al. 2006). CVCs are playing an increasingly important role as an external innovation sourcing strategy, especially for large established corporations based in the U.S. (Napp and Minshall 2011).

Among a plethora of external corporate venturing strategies (e.g., corporate venture capital (CVC)), corporate incubators can be deployed as well as part of a purposeful, open innovation strategy (Chesbrough 2003). Corporate incubators, in contrast to CVCs, provide physical infrastructures and offer spatial proximity to incubated ventures. Corporate incubators have existed since the 1950s, but they exist in discrete organizational forms and, thus, are subject to ambiguous taxonomies. One categorization defines corporate incubators, for example, as an entity providing entrepreneurial ventures with resources (Allen and McCluskey 1990) that improve their chances of foundation and survival (see Löfsten and Lindelöf 2002; Hackett and Dilts 2004; Dettwiler et al. 2006). For our purposes, we consider a corporate incubator as an instrument to enhance the external sourcing of innovation inputs by creating relational ties between a large established corporation and incubated ventures, as well as ties between the incubated ventures themselves, that result in knowledge spillovers.

Corporate incubators can be considered as a network composed of the focal organization and its portfolio of incubated ventures, which serves to introduce novel knowledge, enhance inter-organizational collaboration, and facilitate knowledge flows. A seminal paper that continues to form a crucial reference point for social scientists interested in the role of networks in social and economic life is Granovetter's (1973) essay on the "*strength of weak ties*", where



weak ties are important for the introduction of new ideas and perspectives. The portfolio of incubated ventures can be seen as constituting "*weak*" ties at first, as the entry of a new venture to the incubation portfolio introduces variance to both the focal organization, as well as to the incumbent incubated ventures. Over time, Lyons (2000) observes that inasmuch as incubated ventures are all physically located "*under the same roof*", it makes collaboration much more likely. As scholars suggest that networks are important pathways of information, knowledge, and capabilities (Granovetter 1973; Hansen 1999; Ahuja 2000; Sparrowe et al. 2001), focal organizations and their respective incubated ventures can potentially explore and exploit external knowledge through this network. However, network structures can either impede knowledge flow (Dougherty 1992; Dyer 1999) or improve knowledge flow within and across organizations including teams, liaisons, formal interventions, and meetings (see Almeida 1996; Brown and Eisenhardt 1998; Hargadon 1998; Inkpen and Dinur 1998; Okhuysen and Eisenhardt 2002). The implication is that corporate incubators are a particularly powerful instrument to foster ties between high-quality ventures and slack-endowed focal organizations, because they effectively institutionalize the mechanism that cultivates repeated exchange. The various constellations of ties between individuals that possess high-levels of human capital across these organizational boundaries constitute valuable social capital resources. According to Adler and Kwon (2002), social capital has been found to facilitate inter-organizational resource exchange and product innovation, and to strengthen inter-organizational relations. Similarly, Inkpen and Tsang (2005) found that the benefits of social capital include privileged access to knowledge and information, preferential opportunities, and influence.

Corporate incubators can create value for either, or both the corporate sponsor and the ventures participating in the corporate incubator. From the corporate sponsor's perspective, the value of a corporate incubator for the innovation process is twofold. First, a corporate incubator can provide explorative benefits to the focal organization by providing insights into new markets and technologies, and offering valuable options through privileged access to a portfolio of innovative ventures that are members of the corporate incubator. Through these benefits, the corporate incubator can help a corporate sponsor to build the capacity towards long-term innovativeness. Second, corporate incubators can offer the focal organization new opportunities to exploit specific technological areas by accessing complementary technologies from ventures, or by leveraging existing products and technologies in new markets through ventures (Tidd and Trewhella 1997; Gompers 2002). This combination of benefits can make corporate incubators a potentially valuable element of an organization's overall external venturing program -- that is, the capability to gain market knowledge, access complementary technologies and windows on new technology, as well as anticipate the trajectory of an industry earlier on, likely reinforces the focal organization's competitive advantage in the long-run.

The strategic and financial value of corporate incubators is not limited to corporate sponsors. As much as the established corporation benefits from a venture's resources, technologies, and "*know-how*", an incubated venture itself can draw advantages from the corporate incubator, as well as receive benefits in the exchange with other incubated ventures. For instance, an incubated venture can develop a customer-supplier relationship, whereby the focal organization becomes a user of a venture's services and products. In addition, an incubated venture can engage in product development agreements, or agreements for joint research, or

marketing, sales, distribution (MSD) agreements. The venture may also gain value via the credibility attained by its tie with the focal organization (Maula 2001; McNally 1997). Besides technological and financial advantages, an incubated venture can reap benefits from a focal organization's management advice and operational support. Incubated ventures have the opportunity as well given spatial proximity to each other to interact closely and frequently with other incubated ventures. A venture first selects a particular corporate incubator based on the expectation of benefits from cooperating and learning with complementary ventures already present in the incubator, as well as from more mature ventures that have graduated from the incubator (Ruping and von Zedtwitz 2001). This also agrees with other findings, which showed that ventures tend to use incubators to facilitate relationships with other incubator residents. One can think of incubated ventures as an informal network that reflects communities of practice, characterized principally by the transference of tacit knowledge among actors. That is, incubated ventures have many opportunities to get to know each other, as well as to work together in a variety of ways that fosters venture growth, and, ultimately, that renders incubated ventures more strategically valuable to a focal organization.

In this fashion, corporate incubators can be understood as both the driver and concrete manifestation of inter-organizational collaborative processes, which foster the recombination of knowledge in focal organizations and their respective incubated ventures. As a privileged knowledge network, corporate incubators can be thought of as innovation platforms that produce a competitive advantage to both the participating individual ventures, as well as to the focal corporate sponsors. To the extent that a corporate incubator embodies a network with these advantages, incubated ventures as well as the focal organization gain competitive advantage through quasi-rents (i.e., higher than normal returns).

The corporate incubator can be considered as a hybrid organizational form between hierarchies and markets selected for its ability to mitigate against the uncertainty that focal organizations face in terms of sourcing external innovation inputs to generate sustained competitive advantage. Therefore, the ability of a focal organization to deploy and manage a corporate incubator can be regarded as a valuable capability that varies across organizations. However, the challenge to a focal organization is to produce competitive advantages that survive high velocity environments, which is an extreme form of dynamic markets where even basic industry characteristics such as boundaries, competitors, and customers are in flux. Superior performance thus, results from continuously creating temporary advantages and recalibrating resources to fit the environment, which requires finely tuned sensors as well as the ability to overcome inertial forces and engage in organizational change and realignment. Therefore, the search for, identification of, access to, and transference of novel knowledge are crucial activities for organizational survival. This suggests that a corporate incubator is a complex adaptive system, which has the potential to become collectively more adaptive and generate more sustained competitive advantages for all stakeholders involved, than if the actors operated on their own without such ties.

In this manner, corporate incubators can be analyzed from different perspectives such as network theory, resource-based view (RBV), knowledge-based view, dynamic capabilities, resource dependency theory, organizational learning, and organization design. Further research is needed to examine the antecedents to the decision to establish corporate incubators, as well as the effects of corporate incubators on performance outcomes such as innovation performance. Moreover, as corporate incubators represent one of many corporate venturing strategies available to large established corporations, the relative performance of

corporate incubators as compared to alternative modes of sourcing external knowledge (e.g., mergers and acquisitions, strategic alliances, and corporate venture capital investments) would be beneficial to theory development in the field as well as to corporate practitioners and venture founders. Furthermore, organizations may decide to pursue multiple external knowledge sourcing strategies simultaneously. Future research that considers interactions among multiple strategies and contingencies such as time and sequence would provide valuable insight into the incubation phenomenon well as insight into external corporate venturing more generally.

### **Managing Inter-Organizational Collaborations**

The search for novel knowledge (i.e., new to a particular firm) requires organizations to work with and draw knowledge from many actors outside their organizational boundaries (Shan et al. 1994; Rosenkopf and Nerkar 2001; Katila 2002; Laursen and Salter 2006). Therefore, organizations increasingly depend on inter-organizational relationships (IORs) to search for knowledge outside their boundaries (Chesbrough 2003). In this manner, R&D activities are viewed as becoming increasingly interactive and distributed processes, as fewer firms are able to pursue technological development in isolation (see Carter and Williams 1957; Rothwell 1977; Von Hippel 1988; Lundvall 1992). Teece (1992) has argued that the rise of IORs, promoted by the diversity of inter-organizational collaborative methods, has upset our existing understanding of the organization of innovation, as the boundaries of the firm are becoming increasingly blurred. The implication is that arm's length relationships are not sufficient, and that organizations have a greater disposition to forging close and relatively enduring inter-organizational ties. The literature supports the prediction of a positive link between repeated IORs and the capacity to innovate (Cornish 1997; Propris 2002).

Additionally, there is a positive relationship between repeated IORs and organizational performance (Lööf and Heshmati 2005). This reveals some of the limitations of the resource-based view (RBV), which asserts that an individual organization should work to prevent knowledge spillovers, rather than exchange valuable “*know-how*” as transference is thought to diminish or eliminate competitive advantage. The underlying rationale, according to RBV, is based on the idea that an organization comprises a collection of “*sticky*” and difficult to imitate resources (Penrose 1959; Wernerfelt 1984; Barney 1986). In this view, economic rents are captured uniquely through the protection and deployment of these valuable resources. In contrast, Dyer and Singh (1998) emphasize the adoption of an IOR stance and the development of resources and capabilities (e.g., relation-specific assets, knowledge sharing routines, effective governance) to achieve competitive advantage. Similarly, the dynamic capabilities perspective extends the static nature of RBV to include the notion that dynamic external networks are central to competitive advantage in rapidly changing environments (Teece et al. 1997; Eisenhardt and Martin 2000). For example, Brown and Eisenhardt (1997) suggest that a diverse portfolio of external knowledge sourcing activities increases opportunities for experimentation and learning. Those authors also assert that broad portfolios are particularly suitable when the knowledge objective is to have an expansive insight into the trajectory of future product and market domains, rather than some specific piece of technical knowledge. That is, a portfolio of outwardly oriented relationships leads to a broader knowledge search, resulting in more innovation. Indeed, organizations invest considerable amounts of time, money, and other resources in their search for these opportunities (Cohen and Levinthal 1990). Part of this search effort is expenditure on R&D, but this is only one

element in the search process and may account for only a small portion of investment in the search for innovations (Patel and Pavitt 1995).

Furthermore, there is an increasing tendency to emphasize the role of local knowledge and “*collective learning*” in broad knowledge searches. The argument is that in a globalized economy the key resources for competitiveness depend on localized processes of knowledge creation, in which individuals and firms learn about new technology, learn to trust each other, and share and exchange information (Cohen and Fields 1999). The emphasis is on the role of “*tacit*” as opposed to “*codified*” knowledge, in that the former is viewed as being especially dependent on localized face-to-face contacts and spillovers (Breschi and Lissoni 2001). According to Leamer and Storper (2001), not only is the role of “*tacit*” knowledge increasing, this, in turn, is increasingly accentuating the demand for face-to-face contact in inter-organizational collaborations. For example, in studying the networks in California’s Silicon Valley, Saxenian (1990) emphasizes the value of face-to-face communication between individuals, which facilitates the transmission of knowledge across agents, firms, and even industries, over and above the high endowment of workers’ knowledge (i.e., human capital) that is favorable for innovative activity. Greater intensity of R&D activities relates to the development of more complex or novel innovations, which, in turn, are more likely to require close interactions between discrete organizations.

Effective external venturing, thus, requires not only securing the most relevant external knowledge for a focal organization, but also depends on relational capabilities to both establish and dissolve constellations of external partners, as the environment provides cues that change is fast-approaching. This poses far-reaching challenges to organizations in terms of selecting the “*right*” external partners and the “*right*” collaboration modes, as well as the



task of managing these IORs over time. As organizations often pursue multiple external knowledge sourcing strategies in parallel, the growing complexity of external collaboration networks will be clearly onerous on the attention demands and carrying capacity of top management teams within focal organizations.

### Management Challenges at JEBS

Thematic area “*Management Challenges*” invites submissions that lie in the broad research areas of strategic management, and innovation and technology management. The general topics in this area include strategic decision making processes, inter-firm competition and competitive dynamics, diversification and portfolio strategies, cooperative inter-organizational arrangements (such as alliances and joint ventures), as well as a range of questions related to management of technology and R&D processes, product development strategy, innovation processes and innovation diffusion. In particular, submitted research may focus on the topics of knowledge exchange and external knowledge sourcing strategies; performance effects of different knowledge sourcing strategies; new organizational forms for managing innovation processes within and between firms. The review articles should aim at integrating the existing research, providing its critical evaluation and indicating future research paths and questions to address.

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